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HOW TO RECOGNIZE EROSION IN THE NORTHEAST



Gullies and Deposits

GULLIES AND DEPOSITS are two of the most easily recognized signs of erosion. They do not cause as much soil loss as sheet erosion but their damage is

more spectacular. Gullies destroy land for cultivation and pasture; fresh deposits of soil and gravel cover the topsoil and crops with unwanted materials.



Gully in a bluegrass pasture near Montoursville, Lycoming County, Pa.

Gullies and deposition near Bath, N. Y., the result of one rainstorm.



Muddy Water

THE MUDDY COLOR of the runoff from plowed or cultivated fields during a heavy rain is due to the fine soil in the runoff. After heavy rains, road ditches, streams, and rivers run brown and red with their load of soil. The layer of silt left in dried-up puddles and low spots is proof that muddy water is a sign of erosion.

Muddy water running from a cornfield planted →
up and down the hill, near Kingsville, Carroll
County, Md.



↓ Silt left on a field after muddy water had evaporated, Ontario County, N. Y.



Rills on Bare Land



RUNOFF WATER from heavy rains often leaves rills several inches deep on sloping land. Rills occur most often on freshly plowed or harrowed land, on grainfields when the grain is young, and on cultivated fields after the crop has been harvested. Rill erosion also occurs on grassland where the sod is thin.

Because tillage easily erases rills, they may be forgotten, but such periodic losses reduce the topsoil and fertility.

← Rills on a newly sown grainfield in Centre County, Pa.

↓ Severe rill erosion near Broadbrook, Conn.



Stones and Gravel on Top of the Soil

FARMERS OFTEN pick up surface stones and cart them away and in a few years find there are as many stones as before. This led to the old belief that stones grew. The most common cause of a stony field, however, is the washing away of fine soil, leaving the stones and gravel on the surface. Some-

times, on poorly drained soils, stones are brought to the surface through frost heaving.

Some stones rest on pedestals of soil. These pedestals may be a fraction of an inch or several inches high. The stone protects the soil under it when erosion removes the surrounding soil.



A stony pasture in Chemung County, N. Y.



A flat stone resting on a pedestal of soil after a heavy rain, near North Lansing, Yates County, N. Y. (left). Removing the stone discloses the pedestal of soil (right).

Exposed Boulders and Bedrock



IN SOME FIELDS, boulders and bedrock have become exposed on the surface of the soil, or are struck by plows. Some of the boulders are so large and reach so deep that heaving cannot have affected them. Bedrock is not affected en masse by heaving either. Erosion is what causes boulders and bedrock to become exposed. It lowers the surface of the soil by washing away the soil that covered the boulders and bedrock a few years ago.

← Erosion has exposed a flat sandstone in Somerset County, Pa.

↓ A limestone boulder protruding through the surface of the soil, in Centre County, Pa.



Tile or Stone Drains Struck by Plows

WHEN TILE OR STONE drains were first laid in wet land, they were placed deep enough to be out of danger. In some fields the soil is now so thin as a result of erosion that a plow may strike these drains.

Each successive heavy rain has washed a layer of soil off the surface of the land. In this way, the soil level has been lowered until drainage systems are often damaged by tractors or other heavy farm equipment.

Erosion has reduced the surface soil over this→
stone drain on the experiment station farm, Marcellus, N. Y.



↓ A tractor broke through this tile on a farm near
Elton, Cambria County, Pa.



Exposed Roots of Trees



ROOTS OF TREES ordinarily do not grow above the ground. Exposed roots indicate that the soil is washing or blowing away.

Even though the roots are not exposed, changes of color, texture, or other differences in the bark on the trunk of many trees show that soil is being removed.

← Soil washing has exposed the roots of an apple tree near Waynesboro, Pa.

Grazing this wood lot caused the erosion which exposed the roots of these maple trees in York County, Pa.



Bare Spots on Pasture

IN THE NORTHEAST fields too badly eroded to be cultivated or used for meadows are usually converted to permanent pasture.

Close grazing and trampling of livestock on this eroded land pave the way for further erosion and result in bare spots on the pasture.



A "sand blow" in a pasture near Williston, Vt.

Bare spots on a pasture in Onondaga County, N. Y.



Uneven Topsoil on Sloping and Rolling Fields



ON MANY UPPER slopes, ridges, and knobs, the topsoil has been largely washed or blown away. Here the soil has the lighter color and the quality of the underlying subsoil. Where this topsoil has accumulated farther down the slope or in depressions it may be several inches thick. These places are plainly visible from a distance because of their darker color.

← Light-colored subsoil showing through eroded topsoil on land near Peach Bottom, Lancaster County, Pa.

Three feet of topsoil washed into the lower end of a field, experiment station farm, Marcellus, N. Y.
↓



Uneven Vegetation—Decline in Yields

ON MANY KNOBS, ridges, and upper slopes, the crops are of poorer quality than those grown on the area below. Leaves are lighter colored, plants are

shorter, and crop yields are lower. Low fertility and lack of moisture—the result of loss of topsoil—are the cause of these conditions.



Tomatoes didn't do well on these eroded ridges in Salem County, N. J., as shown in the background.

On the right of the fence is a badly eroded pasture near Spencer, W. Va., that will grow only broomsedge. After the pasture on the left of the fence was treated, it again produced good grass.



Soil Accumulation

Above Trees, Stones, Fences, and Hedges



Washed soil banked to the top of a stone fence near Marcellus, N. Y.

Soil accumulation above a tree in Anne Arundel County, Md.



ON SLOPING LAND, eroding soil accumulates above a tree, stump, or stone pile while on the lower side the soil is washing away. As a result of this kind of erosion an abrupt terrace is formed. The topsoil may be very deep on the upper side and much thinner or even completely gone on the lower side.

Rail fences, board fences, and wire fences also catch eroding soil, thus causing it to accumulate above them; the lower rails, boards, or wires are often buried in soil. But stone fences and stone walls catch the most soil; some are banked to the top with soil washed from the land above. Hedges also cause the water to drop much of the soil it is carrying. Removing fences and hedges that run across the slope often reveals an abrupt terrace or bench several feet high.

Washed soil is stopped by a hedge on a farm in Ontario County, N. Y.



Streambank Cutting Is a Form of Soil Erosi

EVERY YEAR SWIFT currents, and the ice and debris they carry, cut back the soil of streambanks in the Northeast. This eroded soil chokes stream channels and is later deposited downstream as silt and gravel, causing the water to spread and flood adjacent fields. Silt fills reservoirs along the stream and ends their usefulness. It covers fish-spawning beds and the fishing is spoiled. Some of the silt is carried far downstream to large waterways and has to be removed by dredging.

Streambank erosion and undercutting. →



The Winooski River in Vermont cuts away a great deal of good agricultural land every year. ↓



Soil Level of One Field Lower Than the Next Field

WHERE TWO FIELDS lie side by side against a slope, and the dividing boundary runs up and down the slope, it is common to find the soil level of one field lower than the other. Overcultivation and soil erosion on one is usually responsible. The difference is more noticeable where there is a wood lot or pasture

on one side of the field boundary and a cultivated field on the other side.

Other causes may contribute to this difference in elevation. Continual plowing toward the field boundary may raise the soil level of one field above the other. Or the roots of luxuriant shrubs may raise it somewhat.



Erosion has lowered this rotated field near Johnstown, Pa.

A pasture near Somerset, Pa., formerly cultivated, has been lowered through erosion.



Silting of Ponds and Water Holes

WHEN RIVERS, HARBORS, and large reservoirs fill up with soil it is difficult to trace the exact spot where the soil comes from—because of the large drainage

area. But when farm ponds and water holes fill up it is evident that the soil came from nearby. The fields immediately above have lost this soil through erosion.

Forty years ago Phillips' mill pond, New Hope, Pa., provided water power for a grist-mill.



Thirty years later it was completely filled with silt from the fields above.

The pond's 8-foot rock dam still stands.



What You Can Do About Soil Erosion



A farm planned against erosion.

You can learn more about soil conservation measures that can be used to control erosion.

If you are a land owner or operator, you can apply to your local soil conservation district for assistance. A Soil Conservation Service technician assigned to your district will help you make a farm plan and determine the needed soil conservation practices for your farm.

As a conservation-minded citizen, you can learn what needs to be done about soil erosion in your community.

You can urge your schools to integrate conservation of natural resources with present school subjects.

You—as a citizen interested in conservation—or your schools, clubs, and other organizations can get information on available publications and visual materials on soil and water conservation from any Soil Conservation Service office.

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